

1 22. (New) A portable telecommunication apparatus as in claim 20, wherein the first,
2 second and third resilient contact pins (31, 29, 30) are spring ledges.

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2 23. (New) A portable telecommunication apparatus as in any of claims 20-22, where the
3 antenna device (10) is contained in a plastic or rubber antenna housing (42), which is attached to an
upper rear portion of the portable telecommunication apparatus.

REMARKS

Claims 1, 2 and 4-23 are now present in the case. By the present Amendment, Claim 3 has been canceled, Claims 1, 2 and 11 have been amended, and new Claims 20-23 have been added. Applicants have carefully considered the cited references and the Examiner's comments, and believe all the claims in the case patentably distinguish over the references and are allowable in their present form. Reconsideration of the rejection is, accordingly, respectfully requested in view of the above amendments and the following comments.

Initially, in the Office Action, the Examiner indicates that Claims 13-15 are allowed, and that Claims 16/13-16/15 would be allowed if rewritten to depend only from allowed claims. It is noted, however, that Claims 13-15 depend from rejected Claim 12. During a telephone conversation with the Examiner, it was confirmed that Claims 13-15 should also have been indicated as containing allowable subject matter, and not as being allowed.

In any event, by the present Amendment, new Claims 20-23 have been added. Claim 20 corresponds to allowable Claim 13 written in independent form to incorporate the subject matter of Claims 11 and 12, and Claims 21-23 correspond to allowable Claims 14-16. Claims 20-23, accordingly, are believed to be allowable in their present form; and it is respectfully requested that the Examiner so find.

It is also noted that in the body of the Office Action, Claims 1-5, 7, 11, 12, 16/11, 16/12 and 17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Johnson et al (U.S. Patent No. 6,239,765). No specific grounds of rejection of Claims 6 and 8-10 are stated in the body of the Office Action, although these claims are mentioned on page 3 of the Office Action. It is also noted, however, that Claims 6 and 8-10 are indicated as being rejected on the Summary Sheet of the Office Action.

In view of the above discrepancy, it is not completely clear whether the Examiner intended to also reject Claims 6 and 8-10 as being anticipated by Johnson et al, or on different grounds; and it will be appreciated if the Examiner will clarify this matter in the next Office Communication. In any event, in this Response, it is assumed that all the rejected claims are rejected as being anticipated by Johnson et al.

By the present Amendment, independent Claims 1 and 11 have been amended to incorporate subject matter recited in canceled Claim 3 that the common support element on which the first and second antennas are formed comprises a flexible dielectric film. Claim 2 has been amended to properly depend from amended Claim 1. Applicants submit that Claims 1 and 11 as amended are neither disclosed nor suggested by Johnson et al, and that amended Claims 1 and 11 patentably distinguish over Johnson et al and are allowable in their present form.

In particular, the present invention relates to an antenna device which may be provided separated from a printed circuit board of, for example, a telecommunication apparatus such as a mobile telephone, so as to avoid interference between a first antenna and a second, supplementary antenna. In accordance with the invention, the antenna device has flexibility to provide a designer with substantial leeway in designing the telecommunication apparatus. In the present invention, the first and second antennas are formed on a flexible dielectric film. The flexible dielectric film allows the antennas to be provided, for example, at the rear cover of a mobile telephone (see page 3, lines 21-23 of the specification). Due to the flexibility of the support element, the antennas may be provided on different portions of the support element, and arranged at a certain angle to each other (see page 7, lines 3-4).

The antennas in Johnson et al are provided on a common support element, however, the support element is not flexible. Instead, the support element is a dielectric planar element or a printed circuit board (as is described in detail in column 5, lines 9-15 of the reference). No mention of a flexible support element is made anywhere in Johnson et al. Accordingly, Johnson et al. does not teach, and would not suggest to one skilled in the art, providing a flexible support element for the antennas as is provided in the present invention.

The support element according to Johnson et al provides no possibility for a designer of a telecommunication apparatus to provide the first and second antennas on different portions of a support element and to arrange the antennas at a certain angle to each other. Also, there is no mention in Johnson

et al that it is preferable to provide the antenna device separated from the printed circuit board. On the contrary, the antenna apparatus in Johnson et al is provided in close connection to the printed circuit board.

It should also be noted that the antenna in Fig. 7 of Johnson et al is not adapted for short range supplementary communication as is required by independent Claims 1 and 11. In Johnson et al, the antenna traces in Fig. 7 are adapted for different frequencies which are **not** for short-range supplementary communication. A short-range supplementary antenna trace appears to be disclosed in Fig. 9 of Johnson et al. However, as disclosed on page 2, lines 31-35 of the present application and as mentioned above, if a Bluetooth antenna is positioned too close to a cellular antenna on a printed circuit board, separate filtering components must be provided in order to isolate the cellular antenna from the Bluetooth antenna so as to avoid interference. No such filtering components are needed with the apparatus according to the present invention.

For all the above reasons, independent Claims 1 and 11, as amended herein, are neither anticipated by nor obvious in view of Johnson et al, and should be allowable in their present form; and it is respectfully requested that the Examiner so find.

Claims 2, 4-10 and 12-19 depend from and further restrict either Claim 1 or Claim 11 and should also be allowable in their present form.

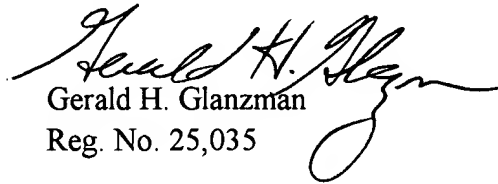
For all the above reasons, Claims 1-2 and 4-23 are believed to be allowable in their present form and this application is believed to be in condition for allowance. It is, accordingly, respectfully requested that the Examiner so find and issue a Notice of Allowance in due course.

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For the convenience of the Examiner, a copy of the claims amended herein and marked-up to show the revisions thereto is attached as EXHIBIT A and a clean copy of all the claims currently in the case is attached as EXHIBIT B.

Respectfully submitted,

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EXHIBIT A
MARKED-UP CLAIM AMENDMENT(S) FOR
RESPONSE TO OFFICE ACTION DATED APRIL 10, 2002

1 1. (Amended) An antenna device (10) having a first antenna (21) adapted for
2 telecommunication in at least a first frequency band and a second antenna (22) adapted for short-range
3 supplementary communication in a second frequency band, characterized in that the first and second
4 antennas (21, 22) are formed on a common support element (26, 27), said common support element (26,
5 27) comprising a flexible dielectric film.

1 2. (Amended) An antenna device as in claim 1, where the first and second antennas
2 (21, 22) are formed as printed traces of conductive material on said [support element] flexible dielectric
3 film (26, 27).

1 11. (Twice Amended) A portable telecommunication apparatus (1), said portable
2 telecommunication apparatus including an antenna device (10) having a first antenna (21) adapted for
3 telecommunication in at least a first frequency band, and a second antenna (22) adapted for short-range
4 supplementary communication in a second frequency band, characterized in that the first and second
5 antennas (21, 22) are formed on a common support element (26, 27), said common support element
6 (26, 27) comprising a flexible dielectric film.

EXHIBIT B
CLEAN SET OF PENDING CLAIMS

All of the claims are reproduced below for the convenience of the Examiner whether or not an amendment has been made.

1 1. (Amended) An antenna device (10) having a first antenna (21) adapted for
2 telecommunication in at least a first frequency band and a second antenna (22) adapted for short-range
3 supplementary communication in a second frequency band, characterized in that the first and second
4 antennas (21, 22) are formed on a common support element (26, 27), said common support element (26,
5 27) comprising a flexible dielectric film.

1 2. (Amended) An antenna device as in claim 1, where the first and second antennas (21, 22)
2 are formed as printed traces of conductive material on said flexible dielectric film (26, 27).

1 4. (Amended) An antenna device as in claim 1, where the first antenna (21) comprises a first
2 feeding point (41) and the second antenna (22) comprises a second feeding point (39), the first and second
3 feeding points being electrically isolated from each other.

1 5. An antenna device as in claim 4, where the second antenna (22) comprises a grounding
2 point (40) positioned in proximity with the second feeding point (39).

1 6. An antenna device as in claim 5, where the second antenna (22) is a planar inverted F-type
2 antenna (PIFA).

1 7. (Amended) An antenna device as in claim 1, where the first antenna (21) is a monopole
2 antenna.

1 8. (Amended) An antenna device as in claim 6, where the second antenna (22) is adapted
2 for communication in a 2.4 GHz frequency band.

1 9. An antenna device as in claim 7, where the first antenna (21) is a multi-band antenna.

1 10. An antenna device as in claim 9, where the first antenna (21) is adapted for communication
2 in a 900 MHz frequency band and at least one of an 1800 MHz frequency band and a 1900 MHz
3 frequency band.

1 11. (Twice Amended) A portable telecommunication apparatus (1), said portable
2 telecommunication apparatus including an antenna device (10) having a first antenna (21) adapted for
3 telecommunication in at least a first frequency band, and a second antenna (22) adapted for short-range
4 supplementary communication in a second frequency band, characterized in that the first and second
5 antennas (21, 22) are formed on a common support element (26, 27), said common support element
6 (26,27) comprising a flexible dielectric film.

1 12. A portable telecommunication apparatus as in claim 11, further comprising a printed circuit
2 board (33) with radio circuitry (23, 24) mounted thereon, and an antenna connector (28) adapted to
3 provide electric contact between the first and second antennas (21, 22) and said radio circuitry (23, 24).

1 13. (Amended) A portable telecommunication apparatus as in claim 12, wherein the first
2 antenna (21) comprises a first feeding point (41) and the second antenna (22) comprises a second feeding
3 point (39), the first and second feeding points being electrically isolated from each other; wherein the
4 second antenna (22) comprises a grounding point (40) positioned in proximity with the second feeding point
5 (39);and wherein the antenna connector (28) includes:

6 a first resilient contact pin (31) adapted to engage with the first feeding point (41) of the first
7 antenna (21),

8 a second resilient contact pin (29) adapted to engage with the second feeding point (39) of the
9 second antenna (22), and
10 a third resilient contact pin (30) adapted to engage with the grounding point (40) of the second
11 antenna (22).

1 14. A portable telecommunication apparatus as in claim 13, wherein the first, second and third
2 resilient contact pins (31, 29, 30) are pogo pins.

1 15. A portable telecommunication apparatus as in claim 13, wherein the first, second and third
2 resilient contact pins (31, 29, 30) are spring ledges.

1 16. A portable telecommunication apparatus as in any of claims 11-15, where the antenna
2 device (10) is contained in a plastic or rubber antenna housing (42), which is attached to an upper rear
3 portion of the portable telecommunication apparatus.

1 17. (Amended) A portable telecommunication apparatus as in claim 11, where the apparatus
2 is a radio telephone (1).

1 18. A portable telecommunication apparatus as in claim 17, where the apparatus is adapted
2 for use in a GSM, UMTS or D-AMPS mobile telecommunications network.

1 19. A portable telecommunication apparatus as in claim 17, wherein said radio telephone (1)
1 comprises a mobile telephone.

* 2 20. (New) A portable telecommunication apparatus (1), said portable telecommunication
3 apparatus including an antenna device (10) having a first antenna (21) adapted for telecommunication in
4 at least a first frequency band, and a second antenna (22) adapted for short-range supplementary
5 communication in a second frequency band, characterized in that the first and second antennas (21, 22)
6 are formed on a common support element (26, 27);

7 wherein said apparatus further comprises a printed circuit board (33) with radio circuitry (23, 24)
8 mounted thereon, and an antenna connector (28) adapted to provide electric contact between the first and
9 second antennas (21, 22) and said radio circuitry (23, 24), the first antenna (21) comprising a first feeding
10 point (41) and the second antenna (22) comprising a second feeding point (39), the first and second feeding
11 points being electrically isolated from each other, and the second antenna (22) comprising a grounding point
12 (40) positioned in proximity with the second feeding point (39); and

13 wherein the antenna connector (28) includes a first resilient contact pin (31) adapted to engage with
14 the first feeding point (41) of the first antenna (21), a second resilient contact pin (29) adapted to engage
15 with the second feeding point (39) of the second antenna (22), and a third resilient contact pin (30) adapted
16 to engage with the grounding point (40) of the second antenna (22).

1 21. (New) A portable telecommunication apparatus as in claim 20, wherein the first, second
2 and third resilient contact pins (31, 29, 30) are pogo pins.

1 22. (New) A portable telecommunication apparatus as in claim 20, wherein the first, second
2 and third resilient contact pins (31, 29, 30) are spring ledges.

1 23. (New) A portable telecommunication apparatus as in any of claims 20-22, where the
2 antenna device (10) is contained in a plastic or rubber antenna housing (42), which is attached to an upper
3 rear portion of the portable telecommunication apparatus.